

THE LASER COMMODOE: A NOVEL DEVICE FOR THE MEASUREMENT OF PERINEAL DESCENT

Hypothesis / aims of study

Perineal descent is a sign of connective tissue weakness of the pelvic floor. It is a common finding in patients with faecal incontinence, difficult defaecation and rectal prolapse. It can be measured using a mechanical or radiological method but both approaches may be inaccurate (1, 2.) Measurement of perineal descent is useful in the assessment of patients pre- and post-operatively. This study aims to evaluate the accuracy of a new non-radiological device for perineal descent measurement. The new device (the laser commode) is compared to the established mechanical method, the Saint Mark's perineometer and the current gold standard method, defaecating proctography.

Study design, materials and methods

Patients with faecal incontinence, difficult defaecation, chronic constipation and rectal prolapse were included in the study. All of the participants had previously been investigated with defaecating proctography.

The new device is comprised of a portable commode and a digital laser distance measurer. The commode platform has been modified to consist of two wooden supports shaped with a protruding medial ledge on each side. The patient is seated with the ischial tuberosities positioned on the ledges. The laser distance measurer (Bosch DLE 500) is a commercially available battery-operated device. It measures distances with an accuracy of ±1.5 millimetres. The distance measurer is placed on the floor below the commode; the distance from the measurer to the perineum is recorded at rest and on straining. The perineometer was constructed using the original description (3.) The frame is placed against the ischial tuberosities with the patient lying in the left lateral position. The measuring cylinder rests against the perineum. Movement of the perineum is measured in relation to the plane of the ischial tuberosities.

Figure 1. The Laser Commode



Figure 2. The Saint Mark's Perineometer



Defaecating proctography is carried out using a standard technique, images were reviewed retrospectively using Picture Archiving and Communications System software (Centricity, GE Healthcare, UK.) The anorectal angle was used to represent the level of the pelvic floor. The top of the examination table seat was used as a consistent landmark. The vertical distance between the anorectal angle and the top of the seat was measured at rest and on straining. A magnification factor was applied to all measurements.

Results

The three methods of perineal descent measurement were compared in 38 patients (36 female.) The mean age was 59.5 years (range 36-78 years). Perineal descent is the distance (in centimetres) which the perineum moves during a strain effort. This is equal to the difference between the perineal descent at rest and on straining.

Table 1. Mean Perineal Descent Measurements using the three Methods

	Perineometer	Laser Commode	Proctogram
Mean Perineal Descent (cm)	1.16	0.69	0.75

Data analysis was performed using SPSS® for Windows version 16.0 (SPSS Inc, Chicago, IL.) A Bland Altman analysis was used to assess the level of agreement between the perineometer and the proctogram and, the laser commode and the proctogram. A range of agreement was defined as the mean bias ± two standard deviations.

Table 2. Mean Bias of Variation between each of the Mechanical Devices and the Proctogram

	Perineometer	Laser Commode
Mean Bias (cm)	0.41	-0.06

95% limits of agreement (cm)	-1.15 – 1.97	-1.26 – 1.14
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Interpretation of results

The mean perineal descent using the laser commode is closer to that of the proctogram than the perineometer measurement. The mean bias of variation between the perineometer and proctography is 0.41; this represents a consistent overestimate by the perineometer. The extent of discrepancy between the two methods is as great as 1.97cm which is clinically significant. In the comparison of the laser commode and the proctogram the mean bias is -0.06. This shows that there is less of a discrepancy between the new device and proctography.

Concluding message

The perineometer over estimates perineal descent compared to proctography. There is less of a discrepancy between the laser commode and proctogram measurements. The perineometer is used in the non-physiological left lateral position. In the seated position used for both the laser commode and the proctogram measurements the effect of gravity allows greater descent of the perineum at rest. This may affect the degree of further descent achieved on straining. The laser commode may be an accurate alternative mechanical device for perineal descent measurement which could be used both as a research tool and in the clinical setting to assess pelvic floor movement.

References

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<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes